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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/078,056	02/15/2002	Ivan P. Mollov	05513.P002	6327

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EXAMINER

JOHNSTON, PHILLIP A

ART UNIT PAPER NUMBER

2881

DATE MAILED: 08/24/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/078,056

Applicant(s)

MOLLOV, IVAN P.

Examiner

Phillip A Johnston

Art Unit

2881



-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 26 July 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-20,22-31 and 33-65 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-20,22-31 and 33-65 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 February 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                        | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948)                | Paper No(s)/Mail Date. _____  |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>8-10-2004</u> .   | 6) <input type="checkbox"/> Other: _____                                    |

***Detailed Action***

1. This 2<sup>nd</sup> Non-Final Office Action is submitted in response to the Amendment filed 7-26-2004, wherein claims 1,10,22,27,33,36,51, and 52 are currently amended, and new claims 53-65 have been added. In addition, claims 1,2,4,7-9,22-25,33-40,44-48, and 50 were previously amended on 2-11-2004, also claims 21 and 32 were previously cancelled and claims 51 and 52 previously added. Claims 1-20,22-31, and 33-65 are now pending.

2. The examiner withdraws the Final Office Action mailed 4-22-2004, for the reasons given in applicants arguments filed 7-26-2004.

***Claims Rejection – 35 U.S.C. 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which the subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1,2-15,17-19,22-25,28,30,33,34,37,38,40-48, and 50-65 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,753,921 to Trauernicht.

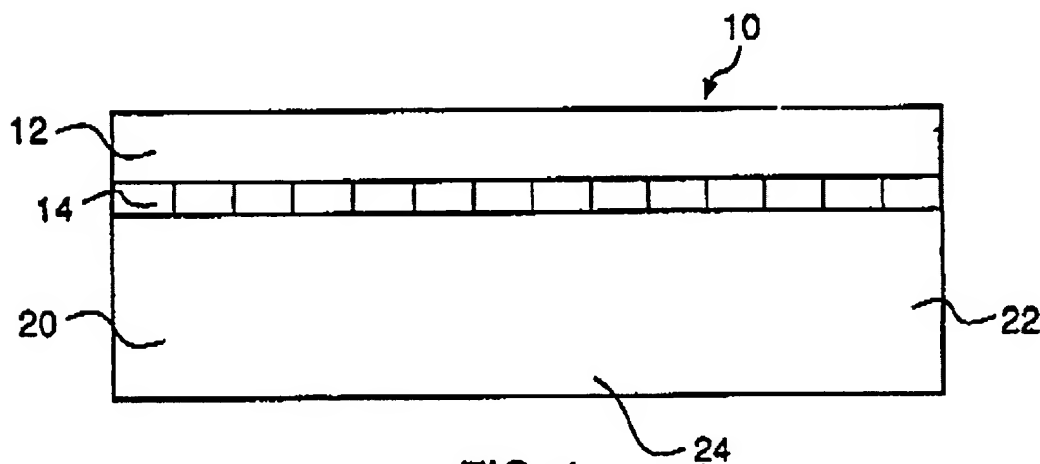
Trauernicht (921) discloses in FIG. 1, an improved detector, generally referred to as 10, that includes a pixellated conversion-detection unit comprising a converter 12 and a plurality of pixels 15 on detection array 14, and a support unit 16. The detector 10 is a planar structure, typically oriented in a plane perpendicular to the angle of incidence of a primary x-ray beam such that the x-ray beam is directed to first impinge on converter 12. It is also envisioned that the improved detector 10 taught by the present invention have other shapes, or that the x-ray beam impinge upon the detector 10 from a different direction. For example, the detector can have a simple curved or complex three-dimensional shape. Also, the x-ray beam could propagate from a direction such that it will first be incident on the support unit 16 rather than the converter unit 12. Furthermore, the x-ray beam can be inclined relative to the detector. As a matter of convenience, the detector will be generally described herein in terms of the planar example shown in FIG. 1 with the x-ray beam first incident upon the converter 12, as recited in Claims 1,10,22,37,38,40-43, 50-53, and 59. See Column 3, line 65-67; Column 4, line 1-42; Column 9, line 1-10; and Figure 1 below.

It is important to note that reference is made to support unit 16 in the discussion above (Also, the x-ray beam could propagate from a direction such that it will first be incident on the support unit 16 rather than the converter unit 12.), yet no support unit 16, as described, is shown in Figure 1, see attached below. However in the ensuing discussion related to Figure 1 (See Column 4, line 1-67), the support unit is only described as reference numeral 20, which is also shown in Figure 1. As a result, it is assumed herein that the support unit is denoted by reference numeral 20 in Figure 1,

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and that as disclosed above, the detector 10 can be irradiated from either the direction of the converter layer 12, or from the direction of the support unit 20, as recited in Claims 1, 10, 22, 37,38,40-43, 50-53, and 59.

Trauernicht (921) also discloses that experiments were carried out on the detector 10 with no substrate, as recited in claims 59 and 60. See Column 12, line 15-25.



Trauernicht (921) also discloses;

(a) A scintillation conversion layer, a semiconductor layer, and a photodiode detection layer, as recited in Claims 3,4,12-15,23,24,30,34,54-56, and 61-63. See Column 4, line 1-42; Column 8, line 55-63; and Column 10, line 41-65.

(b) The use of a photoconductive conversion layer to produce electrical charges across the semiconductor layer, along with electrodes, as recited in Claims 5-9, 17-19, 23-25, 44-48, 57, 58, 64 and 65. See Column 16, line 36-56.

Regarding Claims 2, 11, 22, 28, 33, and 39, Trauernicht (921) further discloses a radiation absorption relationship to describe the attenuation of the incident radiation as it propagates through a substrate. See Abstract.

It is implied herein, that the absorption of radiation in accordance with Trauernicht (921) is equivalent to the received x-ray intensity being greater near the first surface relative to the second surface of the converting layer being exposed by the incident x-rays, as recited in Claims 2, 11, 28, and 39; and is also equivalent to the generation and collection of charge across the semiconductor layer, as recited in Claims 28 and 33.

5. Claims 12, 16, 17, 20, 26, 27, 29, 31, 35, 36, and 49 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,753,921 to Trauernicht in view of Suzuki, U.S. Patent Pub. No. 2003/0015665.

Trauernicht (921) as applied above fails to teach;

- (a) The use of a CCD, as recited in Claims 12, 29, and 35;
- (b) The use of a CsI scintillator, as recited in Claim 16;
- (c) The use of a mirror layer, as recited in Claims 17, 27, and 49; and
- (d) The use of a casing to hold the imager together, as recited in Claims 20, 26, 31, and 36.

However, Suzuki (665) discloses;

(a) The use of a CCD, as recited in Claims 12,29, and 35. See Paragraph [0048].

(b) The use of a CsI scintillator, as recited in Claim 16. See Paragraph [0027]

(c) The use of a reflective layer, as recited in Claims 17,27, and 49. See Paragraph [0032]; and

(d) The use of a frame to hold the device together, as recited in Claims 20,26,31, and 36. See Paragraph [0033].

Therefore it would have been obvious to one of ordinary skill in the art that the optical waveguide apparatus and method of Trauernicht (921) can be modified to use the detection, conversion and framing equipment of Suzuki (665), to a radiation image sensor and a scintillator panel by which clearer output images can be obtained.

### ***Conclusion***

6. Any inquiry concerning this communication or earlier communications should be directed to Phillip Johnston whose telephone number is (571) 272-2475. The examiner can normally be reached on Monday-Friday from 7:30 am to 4:00 pm. If attempts to reach the examiner by telephone are unsuccessful, the examiners supervisor John Lee can be reached at (571) 272-2477. The fax phone number for the organization where the application or proceeding is assigned is 703 872 9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for

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published applications may be obtained from either Private PAIR or Public PAIR.

Status information for unpublished applications is available through Private PAIR only.

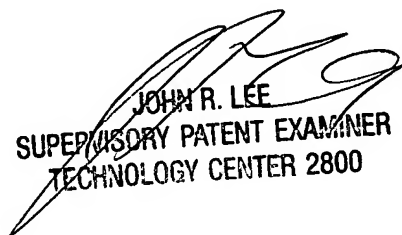
For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should

you have questions on access to the Private PAIR system, contact the Electronic

Business Center (EBC) at 866-217-9197 (toll-free).

PJ

August 10, 2004



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